

CLAIMS

1. (Original) A multi-stratum multi-timescale control system for a network, said system comprising:
 - routing means operating at a first stratum on a first timescale for providing routing functions;
 - resource allocation means operating at a second stratum on a second timescale for providing resource allocation functions;
 - provisioning means operating at a third stratum on a third timescale for providing provisioning functions;

each successive timescale being coarser than its preceding timescale; and

wherein a lower stratum network function provides network information to a higher stratum network function, said higher stratum network function making control decisions based on said network information.
2. (Original) A system according to claim 1 wherein said routing functions provide said network information in the form of a routing index metric.
3. (Original) A system according to claim 2 wherein said routing index metric is created based on automated measurements of a plurality of routes in a route set.
4. (Original) A system according to claim 3 wherein said measurements comprise state information measurements along an entire route.
5. (Original) A system according to claim 2 wherein said routing index metric is based on route depth.
6. (Original) A system according to claim 2 wherein said routing index metric is based on constituent traffic.

7. (Original) A system according to claim 2 wherein said routing index metric is based on traffic classification with respect to defined thresholds.
8. (Original) A system according to claim 2 further comprising means for measuring efficacy of route selection in said network based on said routing index metric.
9. (Original) A system according to claim 1 wherein said resource allocation functions provide said network information in the form of a resource allocation index metric.
10. (Currently amended) A system according to claim 9 wherein said resource allocation index metric is created based on automated measurements of prior resource allocation data.
11. (Original) A system according to claim 9 further comprising means for measuring efficacy of resource allocation in said network based on said resource allocation index metric.
12. (Original) A system according to claim 1 wherein said resource allocation functions comprise functions which configure the network so as to satisfy resource allocation requirements.
13. (Original) A system according to claim 1 wherein said provisioning functions provide said network information in the form of a constituent traffic metric.
14. (Canceled)
15. (Currently amended) A system according to claim 44 13 wherein said constituent traffic metric is created based on automated measurements ~~comprise measurements~~ of accepted primary traffic, accepted secondary traffic, and rejected traffic.

16. (Original) A system according to claim 13 wherein said constituent traffic metric determines network provisioning requirements.
17. (Original) A system according to claim 1 wherein said routing means includes an edge controller, said resource allocation means includes a core controller, and said provisioning means includes a network controller.
18. (Original) A system according to claim 1 wherein said resource allocation means and said provisioning means are integrated.
19. (Original) A system according to claim 1 wherein said second stratum and said third stratum are integrated.
20. (Original) A system according to claim 1 wherein said second timescale and said third timescale are the same timescale.
21. (Previously presented) A multi-timescale control method for a network wherein each of successive timescales in said network is coarser than its preceding timescale, said method comprising the steps of:
 - a) performing, on a first timescale, a routing function, said routing function including determining resource allocation requirements based on a routing index;
 - b) performing, on a second timescale, a resource allocation function, said resource allocation function including determining resource augmentation requirements based on a resource allocation index;
 - c) calculating, on a third timescale, network provisioning requirements based on said resource augmentation requirements, whereby said network provisioning requirements are provided for a resource augmentation decision.
22. (Original) A method according to claim 21 wherein step a) comprises:
measuring at least one parameter relating to a plurality of routes in a

route set; and
compiling a routing index metric based on said measured parameters.

23. (Original) A method according to claim 22 wherein said step of measuring at least one parameter relating to a plurality of routes in a route set comprises collecting state information measurements along an entire route.

24. (Original) A method according to claim 23 wherein said measurements are collected for a connection that is denied along said route.

25. (Original) A method according to claim 22 further comprising the step of measuring efficacy of route selection in said network on the basis of said routing index metric.

26. (Original) A method according to claim 21 wherein step b) comprises configuring network resources to satisfy said resource allocation requirements.

27. (Currently amended) A method according to claim 21 wherein step b) comprises compiling a resource allocation index metric created based on automated measurements of prior resource allocation data.

28. (Original) A method according to claim 27 further comprising the step of measuring efficacy of resource allocation in said network on the basis of said resource allocation index metric.

29. (Original) A method according to claim 21 wherein step c) comprises:
measuring the classification and amount of traffic accepted and rejected on various links of the network system; and
compiling a constituent traffic metric on the basis of said traffic measurements.

30. (Original) A method according to claim 21 further comprising the step of providing network provisioning requirements based on said constituent traffic metric.
31. (Previously presented) An edge node controller having program code stored in a computer readable medium, the program code being operable when executed to:
 - receive a connection request;
 - identify a sink node from said connection request;
 - select a route set based on identification of said source node and said sink node;
 - choose a candidate route from said route set in order of rank;
 - signal a connection on said candidate route;
 - receive measurements taken along said candidate route;
 - determine a routing index value for said candidate route;
 - update a routing index metric with said route index value; and
 - transmit resource allocation requirements to a core node controller.
32. (Original) An edge node controller according to claim 31 wherein said measurements include state information measurements along the entirety of one of an accepted and a rejected candidate route.
33. (Previously presented) An edge node controller according to claim 31 wherein said routing index metric is based on route depth, said route depth being a rank of said one of an accepted and a rejected candidate route.
34. (Original) An edge node controller according to claim 31 wherein said routing index metric is based on constituent traffic.
35. (Original) An edge node controller according to claim 31 wherein said routing index metric is based on traffic classification with respect to defined thresholds.

36. (Previously presented) An edge node controller according to claim 31 further comprising program code operable when executed to measure efficacy of route selection based on said routing index metric.
37. (Previously presented) A core node controller having program code stored on a computer readable medium, the program code operable when executed to:
 - receive a resource allocation requirement from an edge node controller;
 - store a plurality of resource allocation requirements;
 - configure at least one core node in response to said resource allocation requirements;
 - track failed resource configuration attempts;
 - determine resource augmentation requirements based on said failed resource configuration attempts; and
 - transmit said resource augmentation requirements to a provisioning means for calculating network provisioning requirements based on said resource augmentation requirements.
38. (Previously presented) A core node controller according to claim 37 further comprising program code operable when executed to determine a resource allocation index based on said resource augmentation requirements.
39. (Currently amended) A core node controller according to claim 38 wherein said resource allocation index is created based on automated measurements of ~~prior~~ resource allocation data.
40. (Previously presented) A core node controller according to claim 38 further comprising program code operable when executed to:
 - measure efficacy of resource allocation based on at least some information in said resource allocation index.
41. (Previously presented) A core node controller according to claim 37 further comprising program code operable when executed to:
 - determine the severity of said resource allocation requirements; and

sort said plurality of resource allocation requirements according to severity.

42. (Original) A core node controller according to claim 37 wherein said provisioning means is provided on said core node controller.